

ABSTRACT

A composite membrane is provided comprising a porous substrate membrane coated with a membrane comprising N-acetylated chitosan. The N-acetylated chitosan is characterized by a degree of N-acetylation greater than 50% and less than 90%. The porous substrate membrane includes any of polyvinylidene fluoride, polysulfone, and a ceramic. In this respect, composite membrane is provided comprising: a first layer including N-acetylated chitosan, and a second layer including a porous substrate membrane, wherein the first layer is coated upon the second layer. A method of forming a composite membrane is also provided comprising the steps of: forming a porous substrate membrane, depositing chitosan solution on the porous substrate membrane to form a first intermediate, drying the first intermediate to form an intermediate composite membrane including a chitosan membrane, and acetylating the chitosan membrane. A method for separating a liquid mixture including a polar liquid and a non-polar liquid is further provided, comprising the steps of: providing a composite membrane comprising a first layer including N-acetylated chitosan, and a second layer including a porous substrate membrane, wherein the first layer is deposited upon the second layer, and contacting the mixture with the first layer of the composite membrane.